1 INTRODUCTION

This supplement analysis (SA) was prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA). It considers whether the *Final Environmental Impact Statement and Environmental Impact Report for Continued Operation of Lawrence Livermore National Laboratory and Sandia National Laboratories, Livermore* (DOE 1992), hereafter referred to as the "1992 EIS/EIR," should be supplemented, a new environmental impact statement (EIS) should be prepared, or no further NEPA documentation is required. The main body of this SA focuses on the Lawrence Livermore National Laboratory (LLNL) portion of the 1992 EIS/EIR because of the considerable number of LLNL activities relative to those of Sandia National Laboratories, Livermore (SNL) (now known as Sandia National Laboratories/California). The SNL portion of the SA is presented as Appendix A. The SNL component of the SA when compared with the 1992 EIS/EIR indicates that (1) there are no substantial changes to the proposed action relevant to environmental concerns at SNL and (2) there has not been any significant new information uncovered related to environmental concerns there.

1.1 BACKGROUND

The 1992 EIS/EIR was prepared to meet the requirements of NEPA and the California Environmental Quality Act of 1970 (CEQA); it evaluated the impacts on the environment of existing and proposed operations at LLNL and SNL for the period 1992 through 2002. On November 20, 1992, the University of California (UC), as state lead agency under the CEQA, issued a Notice of Determination certifying and adopting the EIR portion of the EIS/EIR. On January 27, 1993, the U.S. Department of Energy (DOE) issued a NEPA record of decision (ROD) in the *Federal Register* (DOE 1993) for the EIS portion of the EIS/EIR, announcing that the Department had decided to continue operation of LLNL and SNL, including projects proposed for the near term (next 5 to 10 years).

In October 1997, the prime contract between DOE and UC for operation of LLNL was extended for 5 years. As part of the extension process, UC prepared an addendum to the CEQA portion of the 1992 EIS/EIR for the UC Regents entitled *Environmental Impact Report Addendum for the Continued Operation of Lawrence Livermore National Laboratory* (UC 1997). That addendum, issued in September 1997, concluded that "there have been no changes in circumstances or in LLNL operations and no new information of substantial importance that would involve substantial impacts or substantial increase in the severity of previously identified significant impacts from the implementation of the proposed action."

1.2 PUBLIC INVOLVEMENT

The DOE announced its intent to seek public involvement in the Supplement Analysis process in several local newspapers, including the *Tri-Valley Herald*, the *Valley Times*, and the *Oakland Tribune* on January 26 and February 3 and 7, 1999. Copies of the draft Supplement Analysis were made available to the public through the LLNL and DOE public reading rooms. Additionally, copies were provided to individuals upon their request. A 30-day comment period was opened from January 26 to February 25, 1999, to receive comments from interested stakeholders. Two public meetings were held at LLNL, at 2 p.m. and 6 p.m. on February 11, 1999. Several members of the public attended the meetings and provided statements and comments. Transcripts and notes were taken of the proceedings. Additionally, several written responses were provided, the most substantial of which was from Tri-Valley CAREs. Those comments and responses were evaluated to determine where the draft SA should be revised. Issues raised included the following:

- Impacts of past operations at LLNL, particularly contamination by tritium and plutonium;
- Whether changes at LLNL are "new circumstances or significant new information" that would trigger preparation of a new sitewide EIS;
- Desire to have a new sitewide EIS prepared;
- Superfund and site remediation issues;
- Health and safety issues in plutonium facilities, including age and safety of high-efficiency particulate air (HEPA) filters;
- Need for weapons research and purpose of the Laboratory;
- Laser isotope separation of uranium;
- Proposed administrative limits changes;
- Off-site contamination with plutonium and tritium;
- Water use by new and existing facilities, including cumulative impacts;
- Whether a BioHazard III laboratory was planned;

- Waste streams and accident risks from mixed oxide fuels programs; and

- Environmental justice considerations at Site 300.

The DOE's responses to comments on these issues are provided in the *Comment Response Document for the Supplement Analysis for Continued Operation of Lawrence Livermore National Laboratory and Sandia National Laboratories, Livermore* (March 1999) (Volume II of this SA). Because of these comments, the following additions or corrections were made for the final Supplement Analysis. Environmental justice at Site 300 was added in Section 8, cumulative impacts of tritium emissions and cumulative impacts of water and electrical use by new facilities were added to Section 9, and consistency of units was incorporated into Section 6. Other editorial corrections were also made to the SA. In the final SA, changes resulting from public comment and editorial review are indicated by shading.

1.3 NEED FOR AND PURPOSE OF THE SUPPLEMENT ANALYSIS

Both the *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (*Code of Federal Regulations*, Title 40, Parts 1500–1508 [40 CFR Parts 1500–1508]), issued by the President's Council on Environmental Quality (CEQ), and DOE's *National Environmental Policy Act Implementing Procedures and Guidelines* (10 CFR Part 1021) provide direction on when an EIS should be supplemented. The regulations state that a supplemental EIS "shall be prepared if there are substantial changes to the proposal or significant new circumstances or information relevant to environmental concerns." If it is not clear whether a supplemental EIS is required, an analysis is to be prepared by which such a determination can be made. Such an analysis is called a supplement analysis (SA). According to 10 CFR 1021.314(c)(1 and 2), an SA shall "discuss the circumstances that are pertinent to deciding whether to prepare a supplemental EIS." It shall "contain sufficient information for DOE to determine whether: (i) an existing EIS should be supplemented; (ii) a new EIS should be prepared; or (iii) no further NEPA documentation is required."

DOE regulations require that sitewide EISs, such as the 1992 EIS/EIR, shall be evaluated at least every 5 years after issuance to determine whether a supplemental EIS is necessary (10 CFR 1021.330[d]). This SA examines the current project and program plans and proposals for LLNL and SNL operations to identify new or modified projects or operations or new information for the period from now to 2002 that was not available for consideration in the 1992 EIS/EIR. If such elements are found, they are examined to determine whether they could be considered substantial relative to the 1992 proposed action and the 1992 ROD. The determinations of whether changes are substantial are based upon analysis and review that establish whether any changes or new circumstances or information results in environmental impacts that exceed the bounds (or envelope) of the consequences of LLNL and SNL operations as presented in the 1992 EIS/EIR; and if the bounds are exceeded, whether the incremental environmental impacts identified in the SA are significant.

New and modified projects and proposals and new information not addressed in the 1992 EIS/EIR (as identified in Section 1.5) were considered in performing an initial screening of pertinent impact areas to determine whether a more detailed evaluation was justified. This screening analysis was performed for the environmental topics normally included in DOE EISs: air quality, water quality, noise, impacts under normal and accident conditions for radiological materials and hazardous materials, waste management, ecology (vegetation, fish, and wildlife), wetlands, special status species, socioeconomics, cultural and archeological resources, land use, transportation, environmental justice, and cumulative impacts.

The screening review was based on several criteria developed to help determine whether impacts of LLNL operations, considering this new information, would clearly remain within the envelope of environmental consequences established in the 1992 EIS/EIR (see also Section 1.6). These criteria were as follows:

1. Is the environmental baseline condition for an impact area the same as that described in the 1992 EIS/EIR?

2. Do the levels of activity or direct or indirect environmental release factors (e.g., release rate or quantity of material at risk), and thus the consequent environmental impacts, remain within the bounds established in the 1992 EIS/EIR?

3. Have there been any new regulatory requirements or revisions to DOE Orders and guidelines since issuance of the 1992 EIS/EIR that might change the conclusions regarding the significance of impacts?

4. Have there been any unanticipated institutional changes that are relevant to the 1992 EIS/EIR impact areas?

1.4 PROPOSED ACTION

The proposed action evaluated in the 1992 EIS/EIR was "the continued operation of LLNL and SNL, Livermore, including near-term (within 5 to 10 years) proposed projects." The proposed action included "[then] current operations plus programmatic enhancements and facility modifications pursuant to research and development missions established for the Laboratories by the Congress and the President." Activities included in the 1992 proposed action were related to site operations; defense-related research and development (R&D), including weapons development; technology development; energy research; biological and medical research; laser optics and inertial confinement fusion (including the National Ignition Facility [NIF]); nonproliferation verification and analysis; and environmental restoration and waste management.

Today, LLNL continues to operate within the general statement of action described in 1992, and the activities listed above are expected to continue. This conclusion is based on an evaluation of studies and plans such as major programmatic EISs that chart the course of programs within the DOE complex, the Waste Management Programmatic Environmental Impact Statement (WM PEIS) (DOE 1997b), the Stockpile Stewardship and Management (SSM) PEIS (DOE 1996b), and the Storage and Disposition PEIS (DOE 1996d); and LLNL plans, such as the Director's Statement — *Creating the Laboratory's Future* (LLNL 1997f) and the *LLNL Institutional Plan: FY 1998–FY 2002* (LLNL 1997b). These reports and plans create a picture of continuing development of existing core programs to meet changing national needs (Figure 1.1). Section 1.5 of this SA discusses whether the continuing development of such programs has resulted in new or modified projects and proposals or changes in environmental circumstances that should be evaluated in this SA.

SNL continues to operate within levels described in 1992. No significant new programs or projects have been proposed since 1992 or are planned for SNL for the near future. In fact, DOE discontinued the tritium operations at the Tritium Research Laboratory and completed its decontamination in 1996. Appendix A presents the information on the SNL component of this SA.

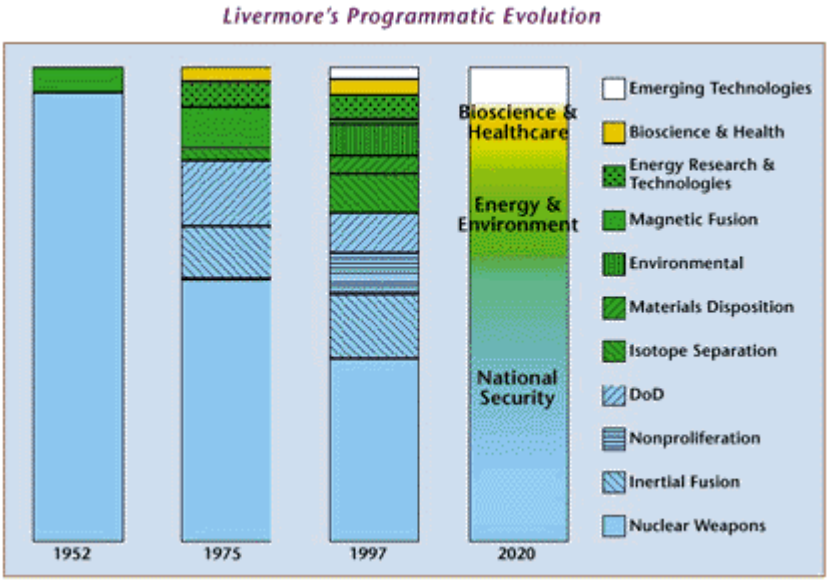

FIGURE 1.1 LLNL's Programmatic Evolution (Source: LLNL 1997f).

1.5 ELEMENTS OF LLNL OPERATIONS CONSIDERED IN THIS SUPPLEMENT ANALYSIS

For purposes of this SA, a number of sources and approaches were used to identify new or modified projects and proposals and new information not anticipated in the 1992 EIS/EIR for the years 1998 to 2002. These sources and approaches included the following:

- NEPA documentation and safety analyses prepared after issuance of the 1992 EIS/EIR were evaluated to determine whether the actions analyzed were included in the EIS/EIR and whether the impacts were within the bounds of those established in the EIS/EIR.

- Institutional and other plans were evaluated to identify major new proposals or projects that would be implemented within the 1998 to 2002 time frame.

- Changes in federal, state, and local regulations were identified.

- The 1997 EIS/EIR CEQA Addendum and other LLNL-related EISs, environmental assessments (EAs), and NEPA reviews were evaluated to identify new programs and projects expected from 1998 to 2002.

- Managers of operational units within LLNL (including facility, program, and area managers) and programmatic staff at DOE's Oakland Operations Office (DOE/OAK) were asked to identify any new proposals or projects proposed for the 1998 to 2002 time frame. They were asked to identify:

  – Ongoing actions that have been modified and proposals for new facilities;

  – Administrative limits proposals for nuclear materials that were not addressed in the 1992 EIS/EIR or that were modifications to the descriptions in the 1992 EIS/EIR;

  – Chemical inventory and management modifications; and

  – Waste generation and waste management modifications, including pollution prevention, decontamination and decommissioning, site cleanup, and upgrade of waste management facilities.

- Other environmental considerations were identified, including new information on the natural and human environment at LLNL and new areas of impact analysis now required for DOE NEPA reviews.

A master list of issue areas, projects, facilities, and new proposals compiled from these sources and approaches was circulated for review by facility, program, and area managers at LLNL and DOE/OAK. The list was also evaluated by LLNL and DOE environmental staff. The results are discussed below.

1.5.1 New and Modified Projects and Modified Ongoing Actions

Since issuance of the 1992 EIS/EIR, new projects beginning between 1992 and 1997 have been described and evaluated in EISs, EAs, and other NEPA-related documents. Plans for some of these projects have been modified from descriptions included in the 1992 EIS/EIR. In addition, new facilities have been proposed that have not yet been subject to NEPA review. Updated descriptions of ongoing, planned, and proposed activities are presented in the *LLNL Institutional Plan: FY 1998–FY 2002* (LLNL 1997b) and the *LLNL Comprehensive Site Plan — 1997* (LLNL 1997a). The most current and comprehensive descriptions of the existing LLNL infrastructure and missions, as well as specific ongoing programmatic activities, are also presented in these plans. These plans, plus the list of new projects and proposals prepared by LLNL and DOE/OAK managers, were compared against five screening criteria to develop a list of new and modified projects and modified ongoing actions considered reasonably realistic for implementation between 1998 and 2002. The five criteria were as follows:

- If a project or action was included in the 1992 EIS/EIR and had already been completed without major modifications, it was not considered.

- If a project or action cited in the 1992 EIS/EIR had been modified, as indicated in additional NEPA reviews or LLNL plans, it was considered.

- If a new or modified project or a recently modified ongoing action had been reviewed and approved or funded through the DOE planning process, it was considered.

- If DOE and LLNL managers considered that a new or modified project or modified ongoing action was likely to go forward within the next 5 years, it was considered.

- If a proposed project or action for LLNL originated from an alternative in a Programmatic EIS (PEIS), it was not considered. Examples include alternatives for LLNL assessed in the WM PEIS and the Surplus Plutonium Disposition PEIS. Preferred alternatives, such as siting the NIF at LLNL, assessed in the Stockpile Stewardship and Management (SSM) PEIS, were considered.

The application of these five criteria resulted in identification of 19 modified or new key projects to be addressed in this SA (Table 1.1). Proposed projects that are not yet funded were only included if there was considerable certainty that they would be funded in the near future and underway by 2002. Other new and modified actions also considered included administrative limits for radioactive materials, waste management practices, and other environmental considerations. These areas are highlighted separately from Table 1.1 in Sections 1.5.2 through 1.5.4.

1.5.2 Environmental Considerations

Since publication of the 1992 EIS/EIR, LLNL has continued to study and evaluate the environmental conditions of the site. The 1992 EIS/EIR anticipated that employment at LLNL would continue to grow as programs expanded. For a variety of reasons, however, employment at the Livermore site has declined by approximately 2,590 to the current 8,713, while employment at Site 300 has expanded by 47 to the current 247. Current projections are that overall LLNL employment will remain stable (DOE 1997a). Changes in employment are analyzed in Section 2.1.

The 1992 EIS/EIR specified monitoring and mitigation measures that have since been implemented. Those monitoring and mitigation measures have been described in annual monitoring reports. Several protected biotic species are now known to occur at the Livermore site (none was known to be there at the time the 1992 EIS/EIR was prepared). The discoveries of the California red-legged frog (federally listed threatened) and the white-tailed kite (state protected) at the Livermore site have necessitated consultation with the U.S. Fish and Wildlife Service (FWS) and the State of California, respectively, and mitigation measures have been developed to reduce the potential for adverse impact on these species from proposed projects. Additional sensitive resources have also been identified at Site 300. This new information is analyzed in Section 3.

The 1992 EIS/EIR described the wetland areas along the Arroyo Las Positas and concluded that groundwater remediation measures might lead to wetland expansion. Indeed, because of a series of wet years, the resulting wetland growth in the arroyo has reduced its capacity to contain a 100-year flood volume. LLNL has proposed that the vegetation clogging the arroyo be removed or controlled. This action would directly affect 20% of the wetland vegetation annually, and thereby reduce habitat value for the California red-legged frog, a federally listed threatened species. A Biological Assessment (BA) was prepared by DOE in 1997 and revised in 1998. A Biological Opinion (BO) was rendered by the FWS in 1997 and amended in 1998. This new information is analyzed in Section 4.

The 1992 EIS/EIR acknowledged that paleontological resources were known from areas within the Livermore Valley near LLNL. However, fossil mammal remains had not been found on the Livermore site. In December 1997, during excavation for the NIF, fossil bones of

TABLE 1.1 New or Modified Key Projects Considered in the Supplement Analysis

Location	Building	Status	Title of Project/Activity	Discussion
Livermore site	292	Funded/ underway	Expedited Technology Demonstration Project (ETDP)	The ETDP involves a molten salt oxidation (MSO) unit consisting of a liquid salt bath in a closed vessel. NEPA review is complete.
Livermore site	New buildings	Underway	National Ignition Facility (NIF) construction and operation	Discussed in 1992 EIS/EIR, modified proposal. Includes laser/target and optics assembly buildings in addition to NIF. Construction started in Fiscal Year (FY) 1997. Included in Appendix I of the SSM PEIS (DOE 1996b), and a Supplemental EIS is in preparation.
Livermore site	693 annex, 694, 695, 696, 697, 280	Funded/ underway	Decontamination and Waste Treatment Facility (DWTF)	Activity is discussed in 1992 EIS/EIR, except for modification of Bldg. 280 (Reactor Dome) to store radioactive and mixed waste. EA is complete (DOE 1996a).
Livermore site	Sitewide: 121, 511, 321, 141, etc.	Proposed, under way, complete	General building and infrastructure upgrades: (1) new Energy Program office building, (2) consolidation of offices, (3) building renovations, (4) general upgrade, (5) sitewide storm drain rehabilitation, and (6) infrastructure modernization	General building upgrades as necessary, beyond those envisioned in 1992. NEPA reviews are mostly complete.
Livermore site	151,154, 241	Proposed	Isotope Sciences Facility	Seismic upgrades, office addition, HVAC retrofit, or decontamination of selected buildings. NEPA review to be prepared.
Livermore site	321 complex	Proposed	Engineering Technology Complex Upgrade	Facility and equipment upgrade and consolidation for engineering functions, FY 2001 start. NEPA review to be prepared.
Livermore site	New building	Proposed	Sensitive Compartmented Information Facility (SCIF)	Renaming and relocation of proposed VISTA.[a] Discussed in 1992 EIS/EIR. Construction of new office building is proposed to begin in FY 2000 and be completed in FY 2002. NEPA review to be prepared.
Livermore site	New building	Proposed	Advanced Strategic Computing Initiative, Terascale Simulation Facility	New proposal. Multistory office building, construction to start in FY 2000 and be completed in 2003. NEPA review being prepared.
Livermore site	490	Proposed	Follow-on to U-AVLIS	Modified from 1992 EIS/EIR. Joint NEPA review by U.S. Enrichment Corporation (USEC) and DOE (Taimi 1999).

TABLE 1.1 (Cont.)

Location	Building	Status	Title of Project/Activity	Discussion
Livermore site	332/334	Funded	Mixed Oxide (MOX) Fuels	New research, development, and demonstration (RD&D) related to nonproliferation. Proposed administrative limit of 500 kg of enriched and 3,000 kg of natural uranium.
Livermore site	331	Funded	Army Tritium Recycle and NIF	Activities in support of other LLNL projects and programs. Administrative limit of 30 g of tritium.
Livermore site	239	Funded	Radiography	Activities in support of other LLNL projects and programs. Administrative limit of 25 kg of uranium and 6 kg of plutonium.
Livermore site	Sitewide	Proposed	Chlorofluorocarbon (CFC) Chiller Conversion	Modified from the 1992 EIS/EIR. Ongoing action to replace Freon. NEPA review complete.
Site 300	801	Funded/ underway	Contained Firing Facility (CFF)	Modified from the 1992 EIS/EIR. Impacts are addressed in Appendix J of the Stockpile Stewardship PEIS (DOE 1996b).
Site 300	809	Proposed	HE Press Installation	Modification to an existing building. NEPA review complete.
Site 300	845	Complete	Explosive Waste Treatment Facility (EWTF)	Activity is discussed in the 1992 EIS/EIR. Separate EA was also completed (DOE 1996c) expanding on the analysis in the EIS/EIR.
Site 300	816 M1-M5	Complete	Explosive Waste Storage Facility (EWSF)	Discussed in the 1992 EIS/EIR. Separate EA is complete (DOE 1995a).
Site 300	New building	Proposed	Fire Station and Medical Facility	Fire Station discussed in 1992 EIS/EIR, medical facility added. Construction is proposed for 1998/1999. NEPA review is complete.
Site 300	829	Complete	B-829 Closure and Cap	Work involved RCRA closure action associated with EWTF. NEPA review is complete.

[a] VISTA = Verification, Intelligence, and Special Technology Analysis.

mammoths and other species were found at the site. Those bones that would be destroyed by excavation were removed after the proper U.S. Department of the Interior (DOI) permit was obtained, and the fossils have been taken to the University of California Museum of Paleontology for curation. Measures have been taken to protect the remaining fossils in place. Any new discoveries would be managed in accordance with the mitigation measures identified in the 1992 EIS/EIR for prehistoric resources. This new information is analyzed in Section 5.

1.5.3 Administrative Limits

Examination of future program requirements by LLNL and DOE identified the need to modify certain radioactive material administrative limits established in the 1992 EIS/EIR. These changes are necessary for continued development of program areas and more efficient materials management. Changes in administrative limits are analyzed in Chapter 6.

The administrative limits evaluated in the 1992 EIS/EIR were achieved, except for the goal of reducing the plutonium limit for Buildings 332 and 334 of the Superblock from 700 to 200 kg. The inventory there was reduced by relocating approximately half of the excess material off-site; however, off-site DOE facilities were unable to accept all the materials and will be unable to accept additional material until after the year 2000. Excess plutonium remaining in Building 332 was packaged and is now being stored until DOE directs its shipment or further disposition (LLNL 1997a). DOE proposes that the 700-kg administrative limit for maximum plutonium stored in Building 332 be retained and that reduction remain a DOE goal. The same buildings also handle, use, and store uranium. The 1992 EIS/EIR evaluated a 300-kg administrative limit for uranium in Buildings 332 and 334. DOE proposes that this limit be modified to allow those buildings to contain 500 kg of enriched uranium and 3,000 kg of natural uranium. This material would be handled, used, and stored in Building 332. Building 334 would be used as a staging area for the mixed oxide (MOX) project; actual experiments would be conducted in Building 332. These changes in administrative limits support research, development, and demonstration (RD&D) of (1) plutonium immobilization as part of DOE's surplus plutonium disposition activities and (2) technologies for uranium conversion, reuse, waste management, and disposal.

The survey of LLNL programs also identified a need to increase the administrative limits for tritium in Building 331 from 5 to 30 g. The administrative limit for Buildings 298 and 391 is 5 g total between the two facilities. In addition, a need was identified to increase the administrative limits in Building 239 from 4.5 to 6 kg for plutonium and from 18.5 to 25 kg for uranium.

1.5.4 Waste Generation and Management

In addition to its scientific program activities, LLNL is continually involved in a wide range of infrastructure repair, improvement, and replacement projects, as well as site remediation and waste management projects related to regulatory compliance and stewardship of DOE lands. Since the 1992 EIS/EIR was issued, some programmatic changes have been implemented to reduce waste generation and move stored wastes to treatment. Several new programs have resulted in increased treatment and storage capacity, capability to more efficiently handle a greater variety of wastes, and an overall long-term reduction in waste generation and on-site storage. These programs include:

1. Implementation of the Site Treatment Plan,

2. Low-Level Waste Certification,

3. Legacy Waste Reduction,

4. Expedited Technology Demonstration Project (ETDP), and

5. Pollution Prevention Program.

Waste generation and management are analyzed in Section 7.

1.6 GENERAL ANALYSIS APPROACH

A four-step review and analysis approach was used in developing this SA. The steps can be summarized as follows:

1. Perform an initial analysis of new or modified projects or proposals, changed circumstances, and new regulations to determine, without further analysis, whether their combined environmental impacts, by impact area, clearly remain within the bounds or envelope of environmental consequences established in the 1992 EIS/EIR (i.e., adverse impacts are not more adverse than or beneficial impacts are not more beneficial than) (Section 1.3[1]). Document this analysis for impact areas meeting the screening criteria and thus requiring no further consideration (Section 2).

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[1] The section numbers given in parentheses refer to the specific SA sections that pertain to the review and analysis steps.

2. Perform more detailed analyses of impact areas not passing the screening (step 1 above) to determine whether the combined impacts remain within the envelope of consequences established in the 1992 EIS/EIR (Sections 3–9).

3. For those impacts that are outside the envelope of consequences established in the 1992 EIS/EIR, determine whether the incremental change in environmental consequences is significant as defined in the CEQ NEPA regulations (40 CFR Part 1508.27) (Sections 3–9).

4. Conclude whether the envelope of consequences from operation of the site as a whole has been exceeded because of modified and new projects or new information; and, if exceeded, discuss whether these environmental impacts could be significant, as defined by 40 CFR 1508.17. On the basis of the overall review and analysis, conclude whether the 1992 EIS/EIR should remain as is, whether a supplemental EIS should be prepared, or whether a new EIS should be prepared (Section 10).

These steps included three decision points. The first (DP1 in Figure 1.2) occurs at the conclusion of the screening of impact areas. If impacts within an impact area are not likely to exceed the envelope of consequences established in the 1992 EIS/EIR, the SA for that impact area is concluded without further review and detailed analysis, and no supplementation was needed.

Those impact areas with a greater potential to exceed the envelope of consequences established in the 1992 EIS/EIR receive a more detailed examination. The second decision point (DP2 in Figure 1.2) occurs at the end of that additional analysis. If the impacts for a particular impact area are judged likely to be within the envelope of consequences established in the 1992 EIS/EIR, no supplementation is needed.

If the environmental impacts determined by the detailed analysis are judged likely to be outside the envelope of consequences established in the 1992 EIS/EIR, these impacts are compared with those from the 1992 analysis to determine whether any differences are substantial and could be considered to be significant within the context of NEPA (40 CFR Part 1508.27). If the incremental impacts within an impact area are beyond the envelope of consequences established in the 1992 EIS/EIR but are less than significant (or would be mitigated to be less than significant under the existing mitigation program), no further supplementation is needed. If the incremental impacts are significant, supplementation of the 1992 EIS/EIR to assess those impacts is required. If the new and modified projects and modifications to ongoing actions are such that the 1992 proposed action of continued operations and the laboratory's mission are no longer valid, then a new EIS is required. Note that regardless of the determination provided in this SA, all new proposals are evaluated individually by DOE for potential environmental impacts as they become appropriate for NEPA review.

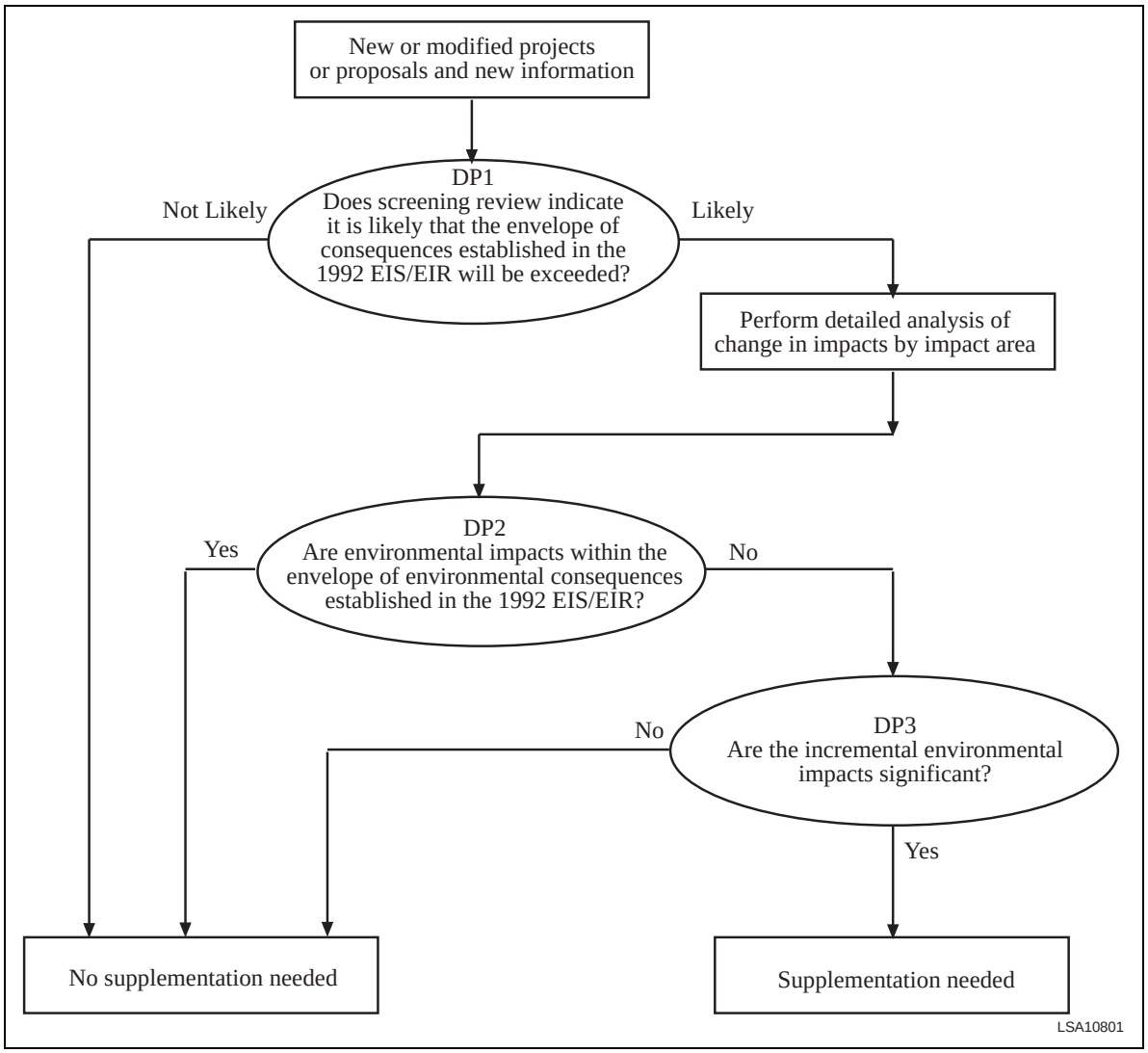

FIGURE 1.2 General Analysis Approach (Note: "DP" stands for Decision Point.)

1.7 DETERMINATION OF IMPACT AREAS FOR DETAILED ANALYSIS

On the basis of the criteria listed in Section 1.3, the potential environmental impacts in the following impact areas were judged to still be within the bounds of the 1992 EIS/EIR: air quality, noise, water quality, hazardous materials, ecology (vegetation, fish, and wildlife), cultural and archeological resources, land use, transportation, socioeconomics, and community services. The reasons for these conclusions are presented in Section 2. The following seven areas were judged to require a detailed analysis for the reasons indicated:

1. *Sensitive Species*: New habitats for special status species and new special status species have been identified (Criterion 1 in Section 1.3); newly

proposed activities may affect these species or their habitats (Criterion 2); and the listing status of several species has changed (Criterion 3).

2. *Wetlands*: Proposed maintenance of floodway along Arroyo Las Positas would result in potential impacts to protected species that are newly discovered at LLNL (Criteria 1 and 2).

3. *Paleontological Resources*: Potential impacts to paleontological resources by future actions were not anticipated in the 1992 EIS/EIR (Criterion 1).

4. *Radiological Consequences of Accidents*: Further analysis is needed to determine whether new or modified projects and/or procedural and operational modifications that require increases in administrative limits would add additional consequences or risk from accidental releases (Criterion 2).

5. *Waste Generation and Management*: Further analysis is needed to determine whether modifications in waste management practices and resulting waste generation could increase impacts associated with waste generation (Criterion 2).

6. *Environmental Justice*: The Executive Order directing agencies to consider environmental justice issues was issued after publication of the 1992 EIS/EIR. This topic is now included in DOE NEPA evaluations (Criterion 3).

7. *Cumulative Impacts*: Whether cumulative impacts in the above six impact areas remain within the bounds of the 1992 EIS/EIR could not be determined until additional analysis was completed (Criterion 2).

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